

Remarks

Applicants respectfully request reconsideration of the present application in view of the following remarks. No claims have been amended, added or cancelled. Therefore, claims 11-31 are pending in the present application.

Claims 11-31 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Publication No. 2003/0203267 to Chou et al. ("the Chou reference") in view of U.S. Patent No. 6,626,650 to Kenchington et al. ("the Kenchington reference").

Independent claim 11 is directed to a fuel cell assembly comprising at least one fuel cell stack, a supporting structure surrounding the fuel cell Stack, and a gas spring disposed within the assembly between the stack and the supporting structure. The gas spring includes a first membrane, a second membrane, and means for sealing edges of the first and second membranes to define a closed chamber therebetween for capture of gas. The gas spring also includes first valve means for admitting gas to the chamber and second valve means for exhausting gas from the chamber.

Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring disposed between a fuel cell stack and a supporting structure surrounding the fuel cell stack as recited in claim 11. In the Office Action mailed September 5, 2008 ("Office Action"), the Examiner stated that the Chou reference teaches the gas spring recited in claim 11. *See Office Action*, pg. 2. Specifically, the Examiner pointed generally to paragraph [0067] and FIGS. 5 and

6 of the Chou reference to support the assertion that a gas spring is disclosed therein. See *id.* Applicants respectfully disagree with the Examiner's position that a gas spring is disclosed in the Chou reference.

In paragraph [0067] of the Chou reference, it is stated that FIG. 5 discloses a compression member (301) configured to exert a compressive force to the components (340, 350, 360, 370, 380, 390) and the seals (345, 355, 365, 375, 385, 395) of an electrochemical device (300). As best seen in FIG. 5 of the Chou reference, the compression member (301) includes a tie rod having two hex nuts attached to the ends of the tie rod on opposite ends of the electrochemical device (300). Applicants submit that the combination of the tie rod and hex nuts shown in FIG. 5 is not a gas spring.

Paragraph [0067] of the Chou reference also states that FIG. 6 discloses a compression member (301) including two end plates (302, 303) that operate in conjunction with one or more tie rods and hex nuts to compress and maintain the electrochemical device (300) in an assembled state between end plates (302, 303). The combination of the end plates (302, 303) disposed on opposing sides of the electrochemical device (300), the tie rods, and the hex nuts do not amount to a gas spring as defined in claim 11.

Paragraph [0067] of the Chou reference also sets forth other alternatives for urging the two end plates towards each other to compress the fuel cell stack components, none of which is a gas spring as defined in claim 11. In particular, the Chou reference states that the compression member (301) includes "springs, hydraulic or pneumatic pistons, pressure pads or other resilient compressive

means" *Chou*, ¶ [0067]. There is nothing in the *Chou* reference to indicate that the springs that are mentioned are gas springs as particularly claimed by Applicants. For example, the mere mention of a "spring" of some kind would have to refer to a spring that could readily be adapted to and used in conjunction with the centrally located rod and nut shown in FIGS. 5 and 6, such as a metallic coil or leaf spring. The hydraulic and pneumatic pistons mentioned in the above-cited portion of the *Chou* reference would have to include some type of moving device (the piston) inside a cylinder that operates to compress the fuel cell stack. Therefore, the moving pistons mentioned in the *Chou* reference are not a gas spring as set forth in claim 11. Lastly, the resilient pads mentioned in the *Chou* reference are merely pads formed of a flexible material, similar to rubber, that is capable of absorbing the compressive force of the rod and nut and withstanding the elevated operating temperatures of a fuel cell stack. None of the alternatives mentioned in the above-cited portion of paragraph [0067] of the *Chou* reference specifically disclose that a gas spring is used in the fuel cell assembly disclosed therein.

Paragraph [0067] of the *Chou* reference also incorporates by reference the compressive members that are disclosed in U.S. Patent Nos. 4,478,917 and 5,176,966. Both of the compressive members disclosed in the above-referenced patents include two rigid plates positioned on opposite sides of a fuel cell stack assembly, which are compressed using a plurality of tie rods and nuts, similar to the arrangement shown in FIG. 6 of the *Chou* reference. Neither of the above-referenced patents disclose a gas spring as set forth in claim 11.

Since nothing in paragraph [0067] and FIGS. 6 and 7 of the Chou reference disclose a gas spring as set forth in claim 11, Applicants submit that the proposed combination of the Chou reference and the Kenchington reference fail to teach or suggest all of the limitations included in claim 1.

Furthermore, Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring including a first membrane, a second membrane, and means for sealing edges of the first and second membranes to define a closed chamber therebetween for the capture of gas, wherein the gas spring is disposed between the fuel cell stack and the supporting structure as recited in claim 11. In rejecting this portion of claim 11, the Examiner stated that the compression member (301) and FIGS. 5 and 6 teach the first and second membranes of the gas spring. *See Office Action*, pg. 2-3. The Examiner was not specific as to which components of the compression member (301) were designated as the first and second membranes of the gas spring in claim 11. Therefore, upon review of FIGS. 5 and 6 of the Chou reference, Applicants will assume that the Examiner is designating the end plates (302, 303), which are components of the compression member (301), as the first and second membrane of the gas spring disclosed in claim 11.

The Examiner goes on to cite paragraphs [0068]-[0075] of the Chou reference to support the assertion that the edges of the end plates (302, 303) are sealed to define a closed chamber for the capture of gas. *See Office Action*, pg. 3. Paragraphs [0068]-[0075] of the Chou reference state that each of the fuel cell

components (340, 350, 360, 370, 380, 390) are sealed together using multi-layer seals (345, 355, 365, 375, 385, 395) to form at least one boundary between fuel and oxidant streams (i.e., fuel and oxidant flow chambers) and to define a junction between the fuel cell components. See, e.g., *Chou* at ¶ [0071].

Applicants will therefore assume that the Examiner is taking the position that the closed chamber recited in claim 11 corresponds to the fuel and oxidant flow chambers positioned between the two end plates (302, 303) (i.e., first and second membranes) in the *Chou* reference. Thus, according to the Examiner, the two end plates (302, 303) in the *Chou* reference are the first and second membranes of the gas spring in claim 11, and the closed chamber defined by the end plates (302, 303) is one or more of the fuel and oxidant flow passages defined within the fuel cell stack itself. Based on this interpretation of the *Chou* reference, the gas spring defined in the *Chou* reference cannot be disposed between the fuel cell stack and a supporting structure (as recited in claim 11) since the fuel cell stack is positioned between the first and second membranes (i.e., end plates (302, 303)) that are used to form the closed chamber of the gas spring. Therefore, Applicants submit that the *Chou* reference does not teach or suggest a gas spring disposed between the fuel cell stack and the supporting structure as recited in claim 11.

For at least the reasons set forth above, Applicants submit that the combination of the *Chou* reference and the *Kenchington* reference does not teach or suggest all of the limitations included in claim 11. It is therefore requested that the rejection of claim 11 be withdrawn. As claims 12 and 14-20

depend either directly or indirectly from claim 11, these claims are not taught or suggested by the proposed combination of references for at least the same reasons that were set forth above with respect to claim 11. It is requested that the rejection of claims 12 and 14-20 be withdrawn.

Independent claim 13 is directed to a fuel cell assembly comprising at least one fuel cell stack, a supporting structure surrounding the fuel cell Stack, and gas spring means disposed within the assembly between the stack and the supporting structure. The gas spring means defines a closed chamber and includes an inlet valve for admitting gas into the chamber and an outlet valve for exhausting gas from the chamber.

For at least the same reasons that were set forth above with respect to claim 11, Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including gas spring means disposed within the fuel cell assembly between a fuel cell stack and a supporting structure as recited in claim 13. It is therefore requested that the rejection of claim 13 be withdrawn.

Independent claim 21 is directed to a fuel cell assembly comprising at least one fuel cell stack, a supporting structure surrounding the fuel cell Stack, and a gas spring disposed within the assembly between the stack and the supporting structure. The spring includes a membrane defining a gas chamber. The fuel cell assembly also includes a first valve positioned in the membrane for admitting gas to the chamber, and a second valve positioned in the membrane for exhausting gas from the chamber.

For at least the same reasons that were set forth above with respect to claim 11, Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring disposed within the fuel cell assembly between a fuel cell stack and a supporting structure as recited in claim 21. It is therefore requested that the rejection of claim 21 be withdrawn. As claims 22-29 depend either directly or indirectly from claim 21, these claims are not taught or suggested by the proposed combination of references for at least the same reasons that were set forth with respect to claim 21. It is requested that the rejection of claims 22-29 be withdrawn.

Independent claim 30 is directed to a fuel cell assembly comprising at least one fuel cell stack, a supporting structure surrounding the fuel cell stack, and a gas spring disposed within the assembly between the stack and the supporting structure. The spring includes a membrane defining a gas chamber, wherein the gas within the closed chamber is at a first pressure. The assembly further includes a first valve positioned in the membrane for admitting gas to the chamber from an exterior of the gas spring, and a second valve positioned in the membrane for exhausting gas from the chamber into the exterior, wherein the exterior is at a second pressure.

For at least the same reasons that were set forth above with respect to claim 11, Applicants submit that the combination of the Chou reference and the Kenchington reference does not teach or suggest a fuel cell assembly including a gas spring disposed within the fuel cell assembly between a fuel cell stack and a

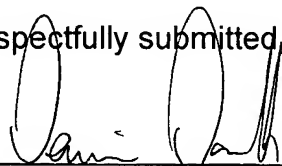
supporting structure as recited in claim 30. It is therefore requested that the rejection of claim 30 be withdrawn. As claim 31 depends from claim 30, this claim is not taught or suggested by the proposed combination of references for at least the same reasons that were set forth with respect to claim 30. It is requested that the rejection of claim 31 be withdrawn.

Conclusion

In light of the foregoing, Applicants submit that claims 11-31 are in condition for allowance and such allowance is respectfully requested. Should the Examiner feel that any unresolved issues remain in this case, the undersigned may be contacted at the telephone number listed below to arrange for an issue resolving conference.

Applicants do not believe that any fee is due at this time. However, the Commissioner is hereby authorized to charge any fee that may have been overlooked to Deposit Account No. 50-4635.

Dated: 12/5/2008

Respectfully submitted,


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